OIPE
APR 03 2006
PATENT & TRADEMARK OFFICE

AF/1763

Attorney's Docket No. 5000.89A **PATENT**
Confirmation No. 5716

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Hua-Shuang Kong et al. Group Art Unit 1763
Serial No.: 09/715,576 Examiner Ram N. Kackar
Filed: November 17, 2000
For: SUSCEPTOR DESIGNS FOR SILICON CARBIDE THIN FILMS

March 30, 2006

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION – 37 C.F.R. § 41.37)

1. Transmitted herewith is the APPEAL BRIEF in this application, with respect to the "Notice of Appeal to the Board of Patent Appeals and Interferences," filed by facsimile on January 30, 2006 and received by the U.S. Patent and Trademark Office on January 30, 2006.

2. This application is filed on behalf of Cree, Inc., a large entity.

3. Pursuant to 37 C.F.R. § 41.20(b)(2), the fee for filing the Appeal Brief is $500.00, which is being paid by credit card transaction. A Credit Card Payment Form is enclosed. The Commissioner is hereby authorized to charge any additional fees which may be required, or credit an overpayment, to Deposit Account 50-0332.

04/04/2006 FFANAIA2 00000052 09715576
01 FC:1402 500.00 OP

Respectfully submitted,

Melissa B. Pendleton

Melissa B. Pendleton
Reg. No. 35,459

021176
SUMMA, ALLAN & ADDITON, P.A.
11610 North Community House Road
Suite 200, Ballantyne Corporate Park
Charlotte, North Carolina 28277-2162
Telephone: 704-945-6700
Facsimile: 704-945-6735
S:\FIRM DOCS\5000\89a\Transmittal of Appeal Brief033006.DOC

PTO/SB/92 (08-03)
Approved for use through 07/31/2006. OMB 0561-0031
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

OIPE IAP47
APR 0 3 2006
PATENT & TRADEMARK OFFICE

Certificate of Mailing under 37 CFR 1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

March 30, 2006
on _____ .
Date

Irene Renee Owens
Signature

Irene Renee Owens
Typed or printed name of person signing Certificate

Note: Each paper must have its own certificate of mailing, or this certificate must identify each submitted paper.

List of documents submitted in Patent Application Ser. No. 09/715,576

1. Transmittal of Appeal Brief	1 pg.	5. Certificate of Mailing	1 pg.
2. Appeal Brief	16 pgs.		
3. Credit Card Payment Form	1 pg.		
4. Post card	1 ea.		

This collection of information is required by 37 CFR 1.8. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.8 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

OIPE IAP47
APR 03 2006
PATENT & TRADEMARK OFFICE

Attorney Docket No. 5000-89A **PATENT**
Confirmation No. 5716

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Hua-Shuang Kong
Serial No.: 09/715,576
Filed: November 17, 2000
For: SUSCEPTOR DESIGNS FOR SILICON CARBIDE THIN FILMS

Group Art Unit: 1763
Examiner: Ram N. Kackar

MARCH 30, 2006

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL BRIEF UNDER 37 CFR § 41.37

This Appeal Brief is filed pursuant to the "Notice of Appeal to the Board of Patent Appeals and Interferences," filed by facsimile on January 30, 2006, and received by the U.S. Patent and Trademark Office on January 30, 2006.

1. ***Real Party in Interest.***

The real party in interest in this appeal is Cree, Inc., the assignee of the above-referenced patent application.

2. ***Related Appeals and Interferences.***

There are no related appeals and/or interferences involving this application or its subject matter.

3. ***Status of Claims.***

The present appeal involves Claims 22, 24, 49 and 50, which are currently under final rejection as set forth in the final Office Action mailed August 29, 2005. Claims 1-21, 23 and 25-48 are cancelled. The claims at issue, namely, Claims 22, 24, 49 and 50, are set forth in the attached Claims Appendix.

04/04/2006 FFANAIA2 00000052 09715576
01 FC:1402 500.00 OP

4. ***Status of Amendments.***

A final Office Action was mailed August 29, 2005, finally rejecting pending Claims 22, 24, and 49 under 35 USC § 102(b) or, in the alternative, under 35 USC § 103(a) and Claim 50 under 35 USC § 103(a). Applicants did not submit any claim amendments after this final Office Action.

5. ***Summary of Claimed Subject Matter.***

The claimed invention relates to a chemical vapor deposition system useful for epitaxial growth of semiconductor materials on substrate wafers. As discussed in the Background of the present application, semiconductor devices can be manufactured by growing thin single crystal layers of semiconductor material on a suitable substrate. The technique is referred to as "epitaxy," a term that describes crystal growth by chemical reaction used to form, on the surface of another crystal, thin layers of semiconductor materials with defined lattice structures. Specification, page 1, lines 15-21.

Silicon carbide is an example of a material that can offer a number of advantageous physical and electronic characteristics for semiconductor performance and devices. Silicon carbide is, however, a difficult material to work with because it can crystallize in over 150 polytypes, some of which are separated from one another by very small thermodynamic differences. In addition, silicon carbide has a relatively high melting point (over 2700°C), and accordingly epitaxial film deposition, among other processes, often require higher temperatures than analogous reactions in other semiconductor materials. Specification, page 1, lines 9-11, and page 2, lines 1-8.

Two techniques useful for chemical vapor deposition (CVD) epitaxial growth of semiconductor materials include hot (heated) wall reactor and cold wall reactor processes. Specification, page 2, lines 22-24. In a hot wall system, epitaxial growth precursor materials and the surrounding container are all raised to the reaction temperature. Specification, page 2, lines 24-28. In a cold wall system, a substrate (also referred to as a wafer) to be used for

epitaxial growth is placed on a platform within a container. The substrate platform (also referred to as a susceptor) is made of a material that will absorb, and thermally respond to, electromagnetic radiation. In this manner, the substrate platform, and the wafer placed on the platform, can be heated to the temperatures required to carry out epitaxial growth. Specification, page 2, line 30 to page 8, line 21.

The use of a cold wall reactor to carry out epitaxial growth, although satisfactory in many respects, can be problematic. Because a wafer rests on a susceptor, the wafer side in contact with the susceptor will become warmer than the remainder of the substrate. This causes a thermal gradient in the axial direction through the wafer. The difference in thermal expansion within the wafer caused by the axial gradient tends to cause the peripheral edges (typically the circumference because most wafers are disc-shaped) to curl away from, and lose contact with, the susceptor. As the edges lose contact with the susceptor, their temperature becomes lower than the more central portions of the wafer, thus producing a radial temperature gradient in the substrate wafer in addition to the axial one. Specification, page 3, line 27 to page 4, line 4.

These temperature gradients, and the resulting physical effects, have corresponding negative affects on the characteristics of the substrate and the epitaxial layers upon it. For example, if the edges are placed in extreme tension, they have been observed to crack and fail catastrophically. Even if catastrophic failure is avoided, the epitaxial layers tend to contain defects. At silicon carbide CVD growth temperatures (e.g., 1300°-1800°C), and using larger wafers (i.e., two inches or larger), wafer bending can become a significant problem. In addition, because wafers have a finite thickness, heat applied by the susceptor tends to generate another temperature gradient along the central axis of the wafer, which can in turn both create and exacerbate the problems listed above. Specification, page 4, lines 8-24.

Yet another temperature gradient typically exists between the rear surface of the substrate wafer and the front surface of the susceptor, i.e., a surface-to-surface gradient. Because many susceptors are formed of graphite coated with silicon carbide, the

thermodynamic driving force created by temperature gradients between the susceptor and the wafers also causes the silicon carbide coating to undesirably sublime from the susceptor to the wafer. Sublimation can in turn result in pin hole formation in the susceptor coating and thus permit contaminants from the graphite to escape and unintentionally dope the substrates or the epilayers. Specification, page 4, line 25 to page 5, line 11.

The present invention provides a CVD system including a susceptor that can operate at the high temperatures required for silicon carbide processing while minimizing or eliminating these radial, axial and surface to surface temperature gradients, and the associated physical changes and problems. See, for example, page 7, lines 8-11, of the specification. Figure 6, reproduced below, illustrates an exemplary embodiment of the claimed susceptor, broadly designated at 50.

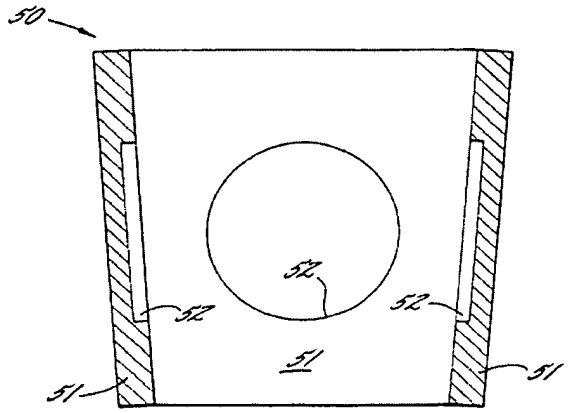

FIG. 6.

The susceptor is defined by a plurality of straight sidewall sections, such as the plurality of adjacent straight side wall sections 51 of Figure 6. Figure 6 illustrates two of the sidewall in cross section and one of the sidewalls in side elevation. The straight sidewall sections are formed of a material that is thermally responsive to electromagnetic radiation. As illustrated in Figure 6, each side wall section has a planar (i.e., flat, without curvature)

surface and is connected at adjacent sides to firm a hollow inverted truncated cone. See also page 9, lines 14-24, of the specification.

The susceptor further includes a plurality of wafer pockets, such as wafer pockets 52 of Figure 6, on the inner circumference of the truncated cone. When the susceptor is heated, the facing walls radiantly heat the front of the wafers while the susceptor heats the rear of the wafers. See, for example, page 10, lines 3-10, of the specification. The spacing across the susceptor is so dimensioned, i.e., small enough, so that the facing sidewall sections radiantly and directly heat the exposed surface of a facing substrate wafer to substantially the same temperature as the susceptor portion heats a substrate wafer that is in one of the wafer pockets, i.e., the unexposed faces that are in direct contact with the susceptor wall. See, for example, page 5, line 28 to page 6, line 2, and page 12, lines 26-32, of the specification. This susceptor structure can help minimize or eliminate thermal temperature gradients, such as radial and axial temperature gradients, across a substrate wafer during epitaxial growth. As a result, the invention can also minimize or eliminate negative physical affects on the substrate and epitaxial layers thereon, which in turn can result in improved physical characteristics and performance of the resultant device.

6. ***Grounds of Rejection to Be Reviewed on Appeal.***

Claims 22, 24, and 49 stand rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Briody (U.S. Patent No. 3,659,552).

Claim 50 stands rejected under 35 U.S.C 103(a) as being unpatentable over Briody in view of Martin et al. (U.S. Patent No. 4,579,080).

7. ***Argument.***

A. Claims 22, 24, and 49 are patentable under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) in view of Briody (U.S. Patent No. 3,659,552).

The Examiner has taken the position that Claims 22, 24, and 49 are anticipated by or obvious in view of the Briody patent. Applicants respectfully submit, however, that Briody does not teach the claimed invention and further there is no basis or motivation to modify Briody as suggested by the Examiner.

As a preliminary matter, the Examiner argues on page 4 of the final Office Action mailed August 29, 2005:

> Being carved out of a ring does not impart patentability since the patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even thought the prior product was made by a different process. (emphasis added).

Yet, Applicants are not claiming a "product-by-process," nor are Applicants basing patentability on the "method of production" of the apparatus. Further, the term "carved out of a ring" nowhere appears in the claims. Contrary to the Examiner's position, the claims recite the structure of the apparatus and do not define the apparatus in terms of a process for making the same. Accordingly, the Examiner's statements in the record indicate that the basis for the rejections of record depends upon an improper reading of the claims and further require reading into the claims recitations not present therein.

1. Briody Does Not Anticipate Claims 22, 24, and 49.

Independent Claim 49 recites a susceptor "defined by a plurality of straight sidewall sections, each section having a planar surface." By definition, a "planar" surface is a flat surface, that is, without curvature. See also Figure 6 of the present application, illustrating an exemplary susceptor having planar sidewall section surfaces, i.e., flat, without curvature.

The Briody apparatus does not include a susceptor "defined by a plurality of straight sidewall sections, each section having a planar surface" as claimed. In contrast to the claimed invention, the Briody apparatus includes a hollow drum-like work holder 16 formed of a plurality of annular members, such as graphite rings 15-15. Column 2, lines 40-46. As illustrated in Figure 1, the plurality of rings 15 form curved side walls in a ringed drum configuration. See also Figure 2, illustrating the curved surface of a section of a ring 15.

The standard for lack of novelty, that is, for "anticipation," is one of strict identity. To anticipate a claim for a patent, a single prior source must contain all its essential elements. Stated differently, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Teleflex, Inc. v. Ficosa North American Corp.*, 299 F.3d 1313, 1335, 63 USPQ2d 1374 (Fed. Cir. 2002 ("As we have repeatedly stated, anticipation requires that each limitation of a claim must be found in a single reference.").

The drum-like work holder of the Briody apparatus includes curved, not planar, walls, and accordingly the claimed apparatus differs structurally from the Briody apparatus. For this reason alone, Briody does not anticipate the claimed invention.

The claimed invention differs in other structural, as well as functional, ways from the Briody apparatus. Independent Claim 49 further states that the "spacing between facing sidewall sections is unobstructed and so dimensioned that said facing sidewall sections radiantly and directly heat the exposed surface of a facing substrate wafer to substantially the same temperature as said susceptor portion heats a substrate wafer that is in one of said wafer pockets to thereby minimize or substantially eliminate radial and axial temperature gradients across a substrate wafer."

The planar surfaces of the sidewall sections of the claimed susceptor facilitate radiantly heating one another across an appropriately dimensioned space by allowing for direct alignment of the heating sections. Specification, page 5, line 18–page 6, line 17; page 9, line 14 to page 10, line 15. This also facilitates heating the exposed wafer surface to

substantially the same temperature as the wafer surface in direct contact with the susceptor wall. This susceptor structure can accordingly minimize or eliminate thermal temperature gradients, such as radial and axial temperature gradients, across a substrate wafer during epitaxial growth.

Briody does not teach spacing between facing planar sidewall sections as claimed. In contrast to the claimed invention, the curved surfaces of the drum like work holder 16 of the Briody patent would not provide a linear, more direct heat path from one wafer pocket to another. Briody certainly does not teach or recognize that appropriately dimensioned spacing can function as claimed to "heat the exposed surface of a facing substrate wafer to substantially the same temperature as said susceptor portion heats a substrate wafer that is in one of said wafer pockets to thereby minimize or substantially eliminate radial and axial temperature gradients across a substrate wafer."

The Examiner gives no patentable weight to these structural and functional recitations of the claimed invention, arguing that the Briody structure is "precisely as claimed." Page 2 of the August 29, 2006, final Office Action. Yet, as discussed above, the structure of the Briody apparatus and the claimed invention are not "precisely the same." In addition, all words in a claim must be considered in judging the patentability of that claim against the prior art (*In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), including structural and functional recitations. A patent applicant is free to recite features of an apparatus either structurally or functionally. See *In re Swinehart*, 439 F.2d 210, 212, 169 USPQ2d 226, 228 (CCPA 1971) ('[T]here is nothing intrinsically wrong with [defining something by what it does rather than what it is] in drafting patent claims.').

The drum-like work holder of the Briody apparatus is not dimensioned to directly heat and provide temperature control as claimed. Accordingly, the claimed apparatus differs structurally and functionally from the Briody apparatus in this regard as well. For this additional reason, Briody does not anticipate the claimed invention.

In view of the foregoing, Applicants submit that the claimed invention is novel over Briody. Applicants respectfully request that the Board reverse the anticipation rejection of Claims 22, 24, and 49 and order immediate allowance of pending Claims 22, 24, and 49 in this case.

2. Briody Does Not Render Claims 22, 24, and 49 Obvious.

The claimed invention also is not obvious in view of Briody. As noted above, independent Claim 49 recites that the "facing sidewall sections radiantly and directly heat the exposed surface of a facing substrate wafer to substantially the same temperature as said susceptor portion heats a substrate wafer that is in one of said wafer pockets to thereby minimize or substantially eliminate radial and axial temperature gradients across a substrate wafer." The basis of the obviousness rejection appears to be the Examiner's conclusion that the Briody apparatus "is precisely as claimed" (page 2 of the final Office Action mailed August 29, 2005, referenced above) and thus would exhibit the same heating response. See also the Examiner's arguments in the paragraph bridging pages 4-5 of the August 29, 2005, final Office Action.

Yet, as discussed above, the structure of the apparatus of Briody is not "precisely as claimed." The sidewall sections of the susceptor of the claimed invention have planar (i.e., flat, not curved) surfaces. In contrast, the walls of the Briody apparatus are curved. Thus, contrary to the arguments set forth in the Office Action, the claimed invention differs structurally from the Briody apparatus.

The Examiner fails to give appropriate consideration to the structural recitations of the claimed invention. To establish *prima facie* obviousness of a claimed invention, all the claim recitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). See also *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), cited above. The Examiner further fails to point to any suggestion or motivation to modify the Briody structure, much less modify the curved sidewalls of the

Briody apparatus. Accordingly, for this reason, the Examiner has failed to establish *prima facie* obviousness.

In addition to these and other structural differences, the Briody apparatus and the claimed invention do not function in the same way. Again, as discussed above, the planar surfaces of the sidewall sections of the claimed susceptor facilitate radiantly heating one another across an appropriately dimensioned space by allowing for direct alignment of the heating sections. Specification, page 5, line 18–page 6, line 17; page 9, line 14 to page 10, line 15. This also facilitates heating the exposed wafer surface to substantially the same temperature as the wafer surface in direct contact with the susceptor wall. This susceptor structure can accordingly minimize or eliminate thermal temperature gradients, such as radial and axial temperature gradients, across a substrate wafer during epitaxial growth, leading to improved wafer processing.

In contrast, the curved surfaces of the drum like work holder 16 of the Briody patent would not provide a linear, more direct heat path from one wafer pocket to another. Briody certainly does not recognize that appropriately dimensioned spacing can function as claimed to "heat the exposed surface of a facing substrate wafer to substantially the same temperature as said susceptor portion heats a substrate wafer that is in one of said wafer pockets to thereby minimize or substantially eliminate radial and axial temperature gradients across a substrate wafer." Accordingly, for this reason as well, the Examiner has failed to establish *prima facie* obviousness.

Further, Briody requires "quartz members 40–40 . . . between the base member 12 and the rotatable support plate 14 to reflect heat toward the drum 16 so that the temperature gradient throughout the drum 16 stays relatively uniform." Column 2, lines 72–75. These quartz members are the only means of adjusting the temperature gradient in the Briody patent.

A prior art reference must be considered in its entirety, i.e., as a whole, for all that it fairly teaches, including portions that would lead away from the claimed invention. *W.L.*

Gore & Assoc., Inc. v. Garlock, Inc., 721 F. 2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied,* 469 U.S. 851 (1984). If the Examiner wishes to appeal to the teachings of a reference, the reference and its teachings must be evaluated in their entirety, and the Examiner is not entitled to selectively ignore those portions of the reference that teach away from the claimed invention.

The claimed invention would not have been obvious to one of skill in the art at the time of the invention, particularly in light of Briody, which requires the quartz members 40 for the purpose of achieving an even temperature gradient. Briody actually teaches away from the claimed invention and suggests, if anything, the use of components separate from the susceptor to control temperature. Briody does not suggest modifying the drum-like work holder or its rings to enhance an even temperature gradient, and to conclude otherwise requires an improper hindsight reliance on Applicants' own specification. Accordingly, the Examiner has failed to establish *prima facie* obviousness for this reason as well.

In addition, Applicants submit again that the Examiner does not give appropriate weight to structural and functional language of the claimed invention. Yet, as noted above, all claim recitations, including functional recitations, must be considered in judging patentability. Despite the Examiner's dismissal of the recited aspects of the claimed invention, a patent applicant is free to recite features of an apparatus either structurally or functionally. See *In re Swinehart*, cited above.

In summary, the law is clear that an Examiner must be able to point to something in the prior art that suggests in some way a modification of a particular reference or a combination with another reference to arrive at the claimed invention. *In re Fine*, 837 F.2d 1071, 5 USPQ 2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ 2d 1941 (Fed. Cir. 1992). The teaching or suggestion to make the claimed modification must be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Absent such a showing in the prior art, the Examiner has impermissibly used the Applicants' teaching to hunt through the prior art for the claimed

elements and combine or modify them as claimed. *In re Laskowski*, 871 F.2d 115, 117, 19 USPQ 2d 1397, 1398 (Fed.Cir. 1989); *see also In re Fine*, 837 F.2d at 1075 ("One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.").

The claimed apparatus and the Briody apparatus differ structurally and functionally from another. Briody does not teach or suggest any modifications to the drum like work member or its components, much less suggest any modifications thereof to enhance temperature gradients. Indeed, if anything, Briody teaches away from the claimed invention by providing separate components (quartz members 40–40) as the only means of temperature control. The Examiner fails to point to anything in the prior art suggesting the claimed invention and must rely on an improper hindsight analysis of the teachings of Applicants' own specification to support a conclusion of obviousness. Inasmuch as Briody fails to teach or suggest the claimed invention, the Examiner has also accordingly failed to establish that the claimed invention is rendered obvious in view of Briody. Applicants respectfully request that the Board reverse the obviousness rejection of Claims 22, 24, and 49 and order immediate allowance of pending Claims 22, 24, and 49 in this case.

B. Claim 50 is patentable under 35 U.S.C. 103(a) over Briody in view of Martin et al. (U.S. Patent No. 4,579,080).

The Examiner has taken the position that Claim 50 is obvious under 35 USC § 103(a) based on a combination of Briody and Martin et al. Applicants respectfully submit that the cited documents, however, fail to teach or suggest the claimed invention for the reasons set forth above, and thus the combination of the cited references cannot be properly applied as against pending Claim 50. The Examiner has accordingly failed to make a prima facie case of obviousness, and the Applicants respectfully submit that the Board reverse this rejection for this reason and order immediate allowance of pending Claim 50 in this case.

Additionally, Briody and Martin teach away from one another and are not properly combined. As an example, the Martin apparatus includes areas of reduced thickness. Column 4, lines 55–64. The Briody patent does not teach or suggest such a modification. As another example, the Martin apparatus includes wafer receptacles shaped to prevent a wafer from contacting the susceptor. Column 10, lines 30–35. In contrast, the Briody patent states that its device centrifugally forces the articles against the susceptor surface. Column 1, lines 64–66. Because the Briody and the Martin patents teach away from various operational aspects of one another, the cited patents are not properly combinable. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

The cited documents fail to teach or suggest the claimed invention, and there is no motivation to combine the references as suggested by the Examiner. Further, the cited documents cannot be combined lest the principle of operation thereof be changed. The Examiner has accordingly failed to make a prima facie case of obviousness, and Applicants respectfully request that the Board reverse this rejection and order immediate allowance of pending Claim 50 in this case.

8. ***Claims Appendix.***

A copy of the claims involved on appeal is provided in the Appendix.

9. ***Evidence Appendix.***

There is no evidence, and therefore an Appendix setting forth evidence is not provided.

10. ***Related Proceedings Appendix.***

There are presently no related proceedings, and therefore an Appendix setting forth any related proceedings is not provided.

Respectfully submitted,

Melissa B. Pendleton

Melissa B. Pendleton
Reg. No. 35,459

021176
Summa, Allan & Additon, P.A.
11610 North Community House Road, Suite 200
Charlotte, NC 29277-2162
Telephone: 704/945-6700
Facsimile: 704/945-6735

CLAIMS APPENDIX

Claims 1-21 (canceled)

Claim 22 (previously presented): A chemical vapor deposition system according to Claim 49 wherein said reaction vessel is made of quartz.

Claim 23 (canceled)

Claim 24 (previously presented): A chemical vapor deposition system according to Claim 49 wherein said source of electromagnetic radiation comprises an induction coil surrounding said reaction vessel.

Claims 25-48 (canceled)

Claim 49 (previously presented): A chemical vapor deposition system consisting essentially of:

a reaction vessel formed of a material substantially transparent to electromagnetic radiation;

a gas supply system in fluid communication with said reaction vessel;

a source of electromagnetic radiation external to said reaction vessel; and

a susceptor within said reaction vessel, said susceptor formed of a material that is thermally responsive to electromagnetic radiation, wherein said susceptor is defined by a plurality of straight sidewall sections, each section having a planar surface, with said sidewall sections connected at adjacent sides, to form a hollow inverted truncated cone with a plurality of wafer pockets on the inner circumference of said truncated cone, and wherein the spacing between facing sidewall sections is unobstructed and so dimensioned that said facing

sidewall sections radiantly and directly heat the exposed surface of a facing substrate wafer to substantially the same temperature as said susceptor portion heats a substrate wafer that is in one of said wafer pockets to thereby minimize or substantially eliminate radial and axial temperature gradients across a substrate wafer.

Claim 50 (previously presented): A chemical vapor deposition system according to Claim 49 wherein said susceptor is formed from graphite coated with silicon carbide.